reflow. However, in the clinical settings, interventional modalities prior to reperfusion cannot be available. A putative mediator of PC, adenosine can be obtained as a metabolite of ATP which is readily available for clinical use. Thus we attempted to test whether the administration of ATP directly into the reperfused area reduces the extent of no-reflow and infarct size. ATP (4 mg/kg/min) was administered for 10 min after reperfusion following 2hrs occlusion of the left anterior descending artery (LAD) via the retrograde cannulation to the left main trunk through the segment distal to the first diagonal branch of LAD in the anesthetized open-chest dogs. Myocardial contrast echocardiography (MCE) with Albunex at 2hrs of reperfusion revealed the ratio of no-reflow area to risk area was smaller in ATP group than that in the control group (0.14 ± 0.08 vs. 0.51 ± 0.12, mean $\pm$ SE, $n = 5$ each, $p < 0.05$). TTC-staining after 3hrs reperfusion revealed the reduction of IS normalized by risk area in ATP group than that in the control group ($13.9 \pm 2.4\%$ vs. $34.0 \pm 17.6\%$, $p < 0.05$). Furthermore, there was no advanced bradycardia during the infusion of ATP. Thus we conclude that transient intracoronary infusion of ATP into the reperfused area reduces the extent of no-reflow and IS. Intracoronary ATP administration can be a beneficial adjunctive therapy after reperfusion in acute myocardial infarction.

3:00

752-5 Dose the "No Reflow" Phenomenon Immediately After Successful Direct Angioplasty Always Indicate Poor Functional Recovery?

Hirofumi Kajiyama, Hironori Hirai, Makoto Suzuki, Tetsuo Lee, Yuko Sugiyama, Atsushi Tokuyama, Masahiko Harada, Toshiyuki Degawa, Shigeki Nishizawa, So Yabuki, Tetsu Yamaguchi. *Toho University Ohashi Hospital, Tokyo, Japan*

Experimental studies have demonstrated that "no reflow" phenomenon after prolonged coronary occlusion indicates advanced myocardial necrosis. In clinical settings, previous studies have suggested that presence of "no reflow" phenomenon following thrombolysis is a useful predictor of poor functional recovery. To test the hypothesis that "no reflow" phenomenon is closely related to the recovery of regional wall motion in a reperfused AMI, we studied 42 myocardial segments in 18 patients with AMI who achieved successful direct angioplasty. MCE was performed immediately after direct angioplasty and repeated 2 weeks later with intracoronary injection of sonicated albumin. Contrast effect in each segment was scored as 0–2 (0, 1 and 2 denoting no, partial and homogeneous contrast effect, respectively). 2D-Echo was performed at day-1 and repeated 1 month later. Wall motion (WM) by 2D-Echo was scored as 0–3 (scores of 0 to 3 indicating dys/akinetic segments to normal, respectively). The relation between mean WM and MCE score immediately after direct angioplasty was as follows:

MCE score	day-1 WM	1 Month WM	Change
2 (n = 20)	$1.1 \pm 0.8^{**}$	$1.7 \pm 0.7^{*\#}$	0.6 ± 0.9
1 (n = 7)	$0.6 \pm 0.8^{*}$	$1.4 \pm 1.4^{\#}$	0.9 ± 0.9
0 (n = 15)	0.0 ± 0.0	$0.8 \pm 1.0^{\#\#}$	0.8 ± 1.0

$^{*}p < 0.01$, $^{**}p < 0.001$ vs. MCE score = 0, $^{\#}p < 0.05$, $^{\#\#}p < 0.01$ vs. day-1 WM

Seven of 15 segments (47%) with MCE score = 0 immediately after direct angioplasty showed functional recovery at 1 month later, and 6 of the 7 segments (86%) showed contrast enhancement at 2 weeks later restudy.

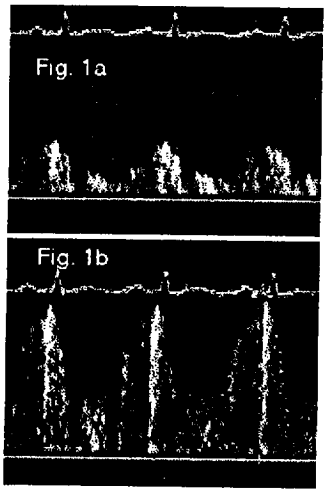
Conclusion: About one half of segments which showed no contrast enhancement immediately after direct angioplasty showed functional recovery at 1 month later, and the majority of these segments showed contrast enhancement at 2 weeks later restudy. The "no reflow" phenomenon by MCE immediately after successful direct angioplasty dose not always indicate poor functional recovery.

3:15

752-6 Visualization of Coronary Arteries and Measurement of Coronary Blood Flow with Transthoracic Echocardiography After Intravenous Administration of a New Echocardiographic Contrast Agent

Sharon L. Mulvagh, David A. Foley, Kyle K. Klarich, Beat C. Aeschbacher, Chuwa Tei, James B. Seward. *Mayo Clinic, Rochester MN*

Imagent® US (AFO145, Alliance Pharmaceutical Corp.), a new hemodynamically inert perfluorochemical echocardiographic contrast agent, produces excellent left ventricular and blood pool contrast effect after intravenous administration when imaged with conventional (2-D) ultrasound. We evaluated the potential of Contrast Specific Imaging (Acuson) employing second harmonic principles to further enhance the visualization of structures containing contrast agents. Transthoracic images were obtained during injections of 10–40 mg of the agent into the left femoral vein of seven closed chest dogs. Coronary Doppler flow was simultaneously measured using an intracoronary Doppler wire. No alterations in flow velocities were observed with contrast administration. There was heterogenous opacification of the myocardium following contrast injection: a striking finding was of contrast-enhanced linear, branching structures in the myocardium consistent with coronary vessels. Further exploration of the largest structures (2–3 mm diameter) in the region of the basal ventricular septum was technically possible with pulsed wave Doppler in two dogs. A characteristic coronary Doppler flow pattern was observed (Fig 1a). Transthoracic Doppler flow velocities transiently increased after intracoronary adenosine (Fig 1b). The calculated coronary flow reserve ratio was similar to simultaneous intracoronary Doppler measurements. *Conclusions:* Intramyocardial coronary vasculature was observed and coronary flow velocites were measured during transthoracic Contrast Specific Imaging with an intravenously administered contrast agent. These findings suggest that noninvasive assessment of coronary blood flow is possible with echocardiographic contrast enhancement.



753 Evaluation of the Thoracic Aorta by Transesophageal Echocardiography

Tuesday, March 21, 1995, 2:00 p.m.–3:30 p.m.
Ernest N. Morial Convention Center, La Louisiane A

2:00

753-1 The Diagnostic and Management Role of Transesophageal Echocardiography in the Evaluation of the Thoracic Aorta — the Expanding View

Andrew J. Gresko, Alan Appelbe, Thomas Martin, Randolph P. Martin. *Emory University; Atlanta, Ga*

The purpose of this study was to examine the accuracy, determine the spectrum of aortic disease and the effect that transesophageal echocardiography has on the clinical management in a consecutive series of patients referred for assessment of aortic disease.

A retrospective review of 75 patients undergoing TEE for aortic pathology was performed. A wide spectrum of disease was encountered: atypical aortic dissections (16), typical aortic dissections (22), aortic aneurysms (13), atheromatous aortas (14), aortic transection (3), Takayasu's arteritis, aortic contusion, coarctation and a penetrating ulcer. The sensitivity and specificity was 96% and 98% respectively. In patients with aortic dissections, 42% of aortic dissections were atypical due to: without an intimal falp (5), unusual localization (4), pre-existing surgery (3), unusual flap morphology (2), and aortic complications (2). TEE altered the diagnosis made by computed tomography in 26% and was the only test in 37%. Of these, 35% had immediate surgery without further investigations. The TEE affected the management of 63% of the patients with aortic dissections.

Conclusions: Transesophageal echocardiography is accurate across a broad spectrum of aortic disease, not just aortic dissection. Atypical aortic dissections are frequently encountered. Transesophageal echocardiography altered or changed management in 63% of patients with aortic dissection.